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MICROGOBIUS CROCATUS, A NEW GOBIID FISH FROM PACIFIC PANAMA[1]

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The genus *Microgobius* is distributed from Baja California to Ecuador in the Pacific and from Chesapeake Bay to Natal, Brazil in the Atlantic. No species is common to both oceans. A new species, herein described, is the eighth known Pacific representative of this genus. There are six species in the Atlantic.

Many species of *Microgobius* are sexually dimorphic in fin and body pigmentation, larger mouth and elongation of the dorsal spine filaments in the male, and greater development of the fleshy nuchal crest in the female. As *M. crocatus* is known from a single male, the nature of these characters in the females may vary from the following account.

The single specimen of *M. crocatus* has been compared with material of both sexes throughout the known range of each of the nominal Pacific species of *Microgobius*. Those Pacific species which I consider to be valid are listed in the comparative materials section. A review of the entire genus is nearing completion.

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Comparative Material: Microgobius tabogensis Meek and Hildebrand: USNM 81844 (holotype), PANAMA, Taboga Island, S. E. Meek and S. F. Hildebrand, 1 (36.2); USNM uncat., San Francisco Beach near Panama City, S. F. Hildebrand, 13 February 1937, 2 (16.0–22.3); USNM uncat., C. Z., Venado Beach, S. F. Hildebrand, 26 February 1937, 3 (30.3–31.5); USNM uncat., C. Z., Miraflores Locks (lower chamber), S. F. Hildebrand, 26–29 March 1937, 26 (17.0–33.1); UCLA W54–45, COSTA RICA, Golfo de Nicoya, Isla Caballo, Erdman Cove, C. Peterson and party, 22 November 1952, 58 (15–35); UCLA W54–254, MEXICO, Baja, Bahia Magdalena, Turtle Inlet, M. A. Newman and party, 81 (29.3–45.0).

Microgobius miraflorensis Gilbert and Starks: FMNH 8489, PANAMA, Rio Culebra, S. E. Meek and S. F. Hildebrand, 19 March 1911, 2 (29.7–33.2); USNM 81845, Rio Culebra, S. E. Meek and S. F. Hildebrand, 19 March 1911, 2 (32.8–33.8); UMMZ 173398, MEXICO, Guerrero, Laguna Coyuca, about 10 mi. NW of Acapulco, R. R. and M. Miller, 21 March 1957, 9 (24.5–31.0); UCLA W52–44, Sonora, Gulf of California, Estero, about 2 mi. W of Yavarros, A. O. Flechsig and party, 9 February 1952, 17 (20.9–36.3).

Microgobius curtus Ginsburg: USNM 107292 (holotype), ECUADOR, Salada, Guayaquil, W. L. Schmitt, 1–2 October 1926, 1 (29.9); USNM 88788 (paratypes), same data as USNM 107292, 5 (18.7–33.9); UMML 23812, PANAMA, Pacific Ocean, about 1.3 mi. SSE of Miraflores Locks on west side of Panama Canal near town of Cocoli, R. Birdsong, T. Fraser, T. Murray, 14 May 1967, 1 (36.1); UMML 23811, C. Z., Miraflores Locks at base of spillway, R. Birdsong, T. Fraser, 11 May 1967, 1 (39.3); UMML 23813, C. Z., bay SSE of Miraflores Locks on W side of canal E of Cocoli, R. Birdsong and D. Dean, 17 May 1967, 1 (39.4).

Microgobius brevispinis Ginsburg: USNM 81842 (holotype), PANAMA, Balboa, in tide pools, S. E. Meek and S. F. Hildebrand, 7 February 1912, 1 (42); USNM 81841 (paratypes), Panama City, in tide pools, S. E. Meek and S. F. Hildebrand, 19 February 1912, 4 (42.2–48.7); USNM 81843, Panama City, in tide pools, S. E. Meek and S. F. Hildebrand, 21 March 1912, 2 (45.3–50.1); UMML 23810, C. Z., Kobbe Army Base, Venado Beach, R. Birdsong and party, 12 May 1967, 4 (14.8–47.6); SIO 62-106, MEXICO, Baja, Magdalena Bay, Isla Margarita, 44 (34.6–63.0).

Microgobius cyclolepis Gilbert: USNM 44370 (holotype), Gulf of California, 30°37′30″N, 113°07′W, 7 fms., ALBATROSS sta. 3020, 24 March 1889, 1 (44.8); SIO 64-875, MEXICO, Baja, Bahia Almejas, field no. B6411-12, TR 122, 109 (24.9–43.5).

Microgobius erectus Ginsburg: UCLA W50-43, MEXICO, Sonora, Gulf of California, 80 mi. S Guaymas, near Boca del Rio Mayo, A. O. Flechsig, 27–29 January 1950, 2 (39.8–47.4); UMML 23809, PANAMA, Bay of Panama, 8°38.6′N, 78°51.9′W, 17 fms., R/V PILLSBURY sta. 535, 6 May 1967, 23 (28.4–37.3); UMML 23808, Bay of Panama, 7°50.7′N, 80° 09.8′W, 9–10 fms., R/V PILLSBURY sta. 492, 2 May 1967, 11 (28.5–44.6).

Microgobius emblematicus (Jordan and Gilbert): FMNH 8488,

PANAMA, Balboa, S. E. Meek and S. F. Hildebrand, 5–6 May 1911, 1 (39.7); FMNH 8487, Balboa, S. E. Meek and S. F. Hildebrand, 31 January 1912, 1 (30.0); UMML 23806, C. Z., Kobbe Army Base, Venado Beach, R. Birdsong and party, 12 May 1967, 59 (24.1–48.7); UCLA W51-36, MEXICO, Sinaloa, Gulf of California, Astillero at Mazatlan, B. W. Walker and party, 29 January 1951, 2 (29.7–33.3).

Microgobius crocatus new species

(Fig. 1)

Diagnosis: A species of moderate size (30.6 mm SL) having no dark spot on body below origin of spinous dorsal; lips, pelvic distal margin and anal margin yellow; interorbital distance broad (7.8 mm in head); eye large (3.1 mm in head); scales cycloid except for a small patch of weakly ctenoid scales under P_1; lateral scale rows about 49.

Description: D. VII-I,17; A. 1,17; P_1 23-23; P_2 1,5, the inner rays completely joined; P_2 with well-developed frenum; caudal fin with 17 segmented rays, 15 branched rays; gill-rakers of first arch 4 + 14; vertebrae 11 + 16. Head, nape and area below anterior spinous dorsal naked. Tongue deeply notched. Anterior teeth in two rows in both jaws, one row posteriorly; outer tooth row enlarged, caninoid; no teeth on vomer or palatines. Mouth large (upper jaw 1.6 in head), inclined about 45° from horizontal axis. Branchiostegals 5 (1 on shaft of ceratohyal, 3 on enlarged portion of ceratohyal, 1 on epihyal). Third to fifth dorsal spines with elongate filaments, longest reaching end of soft dorsal. Cephalic lateral-line canals (Fig. 2): supraoccipital canals separate except at juncture with single, enlarged medial pore; each supraoccipital canal terminating in a single nasal pore; infraorbital canal obsolete, containing a single pore at juncture of supraorbital canal with lateral canal; lateral canal with 2 pores; preopercular canal short, with 2 pores. Anterior nostril tubular. Fleshy nuchal crest absent. Pectoral fin 3.6 mm in SL; pelvic fin 4.3 mm in SL.

Color Description: Body dusky, greenish yellow dorsally, becoming white ventrally; belly bluish. Two small yellow spots on body under dorsal edge of appressed pectoral fin. Yellow spot on mid-pectoral base, another on mid-line of nape. Two iridescent blue, longitudinal stripes on cheek; two iridescent blue spots on anterior edge of opercle, and two orange-yellow spots on posterior edge; lips dusky yellow; chin dusky.

Spinous dorsal fin dusky with yellowish cast to basal portion; clear slash originating at base of each spine and running at slight diagonal to each spine; distal portion of fin dark with orange-red cast to filaments. Soft dorsal dusky, with narrow, dark distal margin and orange cast. Pelvic fins dusky with distal yellow margin. Anal fin dusky with yellow distal margin and a submarginal dark stripe. Caudal fin with yellow ventral stripe and several orange spots dorsally; median caudal rays dusky orange.

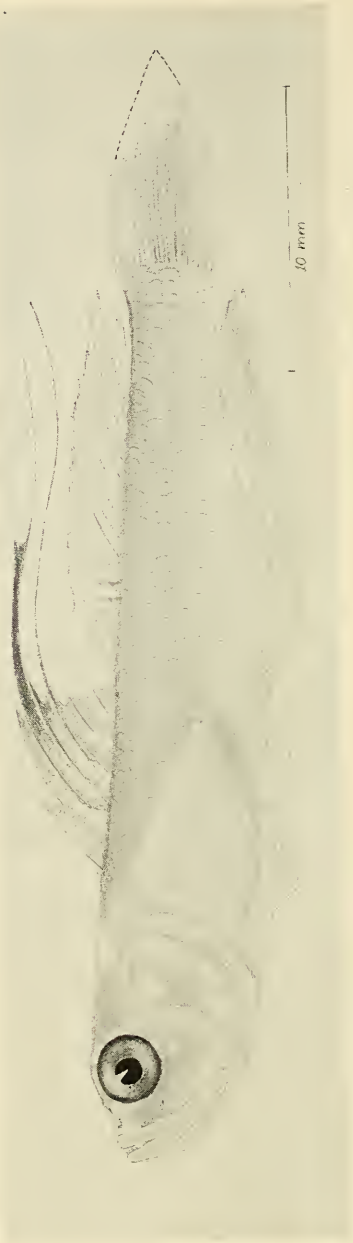

FIG. 1. *Microgobius crocatus*, holotype, USNM 202587, 30.6 mm SL, male, Pacific, Panama.

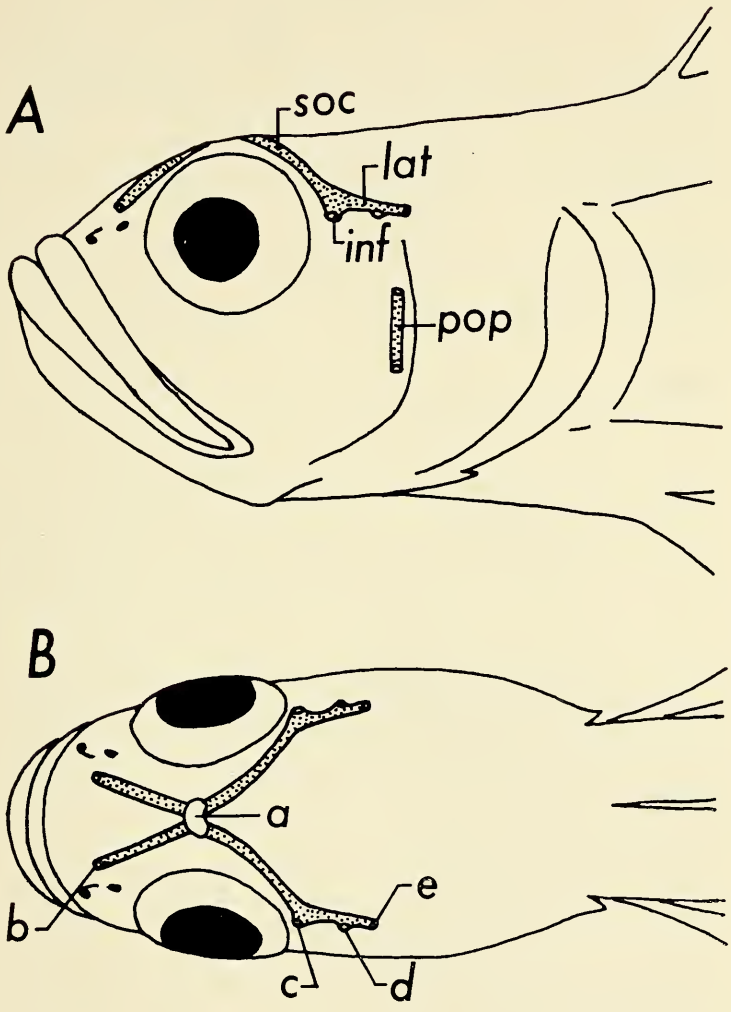

Fig. 2. Cephalic lateral-line canals of *Microgobius crocatus*. A.—lateral view: supraoccipital canal (soc); lateral canal (lat); infraorbital canal (inf); preopercular canal (pop). B.—dorsal view: medial supraoccipital pore (a); nasal pore (b); infraorbital pore (c); lateral pores (d, e).

TABLE 1.—Comparison of *Microgobius crocatus* with *Microgobius tabogensis*.[1]

Character	Species	
	Microgobius crocatus	*Microgobius tabogensis*
Spot below D_1 origin[2]	absent	present
Body dorsum[2]	no dark dashes	5–6 dark dashes on body along dorsal fin bases
Spinous dorsal fin[2]	7 clear slashes	basal row of dark spots
Soft dorsal fin[2]	narrow dark border, no basal stripes	no dark border, 2–3 basal stripes
Anal fin[2]	dark submarginal stripe	no dark submarginal stripe
Pelvic fins[2]	dusky with pale margin	completely dusky
Interorbital width	7.8 in head	13.4 in head (10.8–17.3)
Ctenoid scale patch under P_1	small	moderately large
Second dorsal fin	I, 17	I, 16 (rarely 17)
Anal fin	I, 17	I, 16 (rarely 17)

[1] Males only.

[2] Pigmentation in preserved specimens.

Etymology: The name *crocatus* (Latin) alludes to the yellow markings on the fins, body and lips.

Holotype: USNM 202587 (30.6 mm SL, male); PANAMA, Pacific Ocean; approximately 1.3 mi. SSE of Miraflores Locks on west side of Panama Canal near town of Cocoli; muddy tidal slough; depth of capture 4 ft.; 14 May 1967; original field no. RSB-PAN-11; collected by R. Birdsong, T. Fraser, T. Murray.

Habitat: A tidal slough that receives some freshwater through a drainage ditch emptying the incompleted auxiliary lock of the Miraflores system near Cocoli. The bottom consists of soft mud and detritus to a depth of several feet. The shores are thickly overgrown with mangrove. There is a moderate surge during peak tidal flow. One specimen of *Microgobius curtus* was among the other species collected with the holotype.

Relationships: Microgobius crocatus appears to be most closely related to *M. tabogensis* with which it is sympatric. They are similar in all meristic features and differ primarily in interorbital width and pigmentation pattern (Table 1). Features of color and pattern are diagnostic and highly stable in the genus *Microgobius*. This appears to be true of all brightly colored species of gobiid fishes which display a large degree of sexual dimorphism in pigmentation.